

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION  
METAL AND NONMETAL MINE SAFETY AND HEALTH  
REPORT OF INVESTIGATION

Surface Nonmetal Mine  
(Sand and Gravel)

Fatal Powered Haulage Accident  
April 4, 2006

Milliken Plant  
Aggregate Industries, Inc.  
Edwardsburg, Cass County, Michigan  
Mine I.D. No. 20-03096

Investigators

Stephen W. Field  
Mine Safety and Health Specialist

Earl L. Gossett  
Mine Safety and Health Inspector

Originating Office  
Mine Safety and Health Administration  
North Central District  
515 West First Street, Room 333  
Duluth, MN 55802-1302  
Steven M. Richetta, District Manager



## **OVERVIEW**

Ayron C. Kull, plant laborer, age 23, was fatally injured on April 4, 2006, when he became entangled in a conveyor belt tail pulley at the portable crushing plant. Kull had entered the area under the crusher from the back end and traveled to the back side of the pulley.

The accident occurred because management failed to establish procedures to ensure that employees could safely remove spillage near moving conveyors. The conveyor was not de-energized and blocked against motion prior to persons entering the area. The victim failed to recognize the hazard of performing work near moving machine parts.

## **GENERAL INFORMATION**

Milliken Plant, a surface sand and gravel mining operation, owned and operated by Aggregate Industries, Inc., was located at Edwardsburg, Cass County, Michigan. The principal operating official was Phillip Bowden, president, Central Region. The mine was normally operated one, 8-hour shift per day, five days a week. Total employment was seven persons.

Material was mined from the pit with a rubber-tired front-end loader and then crushed, screened, washed, and stockpiled by conveyor. The finished products were sold for use as construction aggregate.

The last regular inspection of this operation was completed on September 15, 2005.

## **DESCRIPTION OF ACCIDENT**

On the day of the accident, Ayron C. Kull (victim), plant laborer, reported for work at 7:00 a.m., his normal starting time. Kull performed his clean-up duties throughout the plant until 9:00 a.m., when he relieved Todd E. Yetzke, loader operator. Kull mined and transported material from the pit bank to the primary crusher until 10:00 a.m. Kull again relieved Yetzke at 12:00 p.m. so he could break for lunch.

Just prior to the accident, Yetzke and Scott A. Glenn, loader operator, saw Kull removing spillage beneath the crusher discharge from the sides of the conveyor tail pulley. About 3:35 p.m., Yetzke noticed the discharge conveyor had stopped so he immediately de-energized the crushing plant. Yetzke and Glenn thought the crusher was plugged and that they needed to shovel off the belt. John G. Julien, plant manager, arrived to assess the situation.

Yetzke noticed Kull's safety glasses lying on the horizontal support beam at the back end of the crusher plant. He traveled to the front of the crusher structure and found Kull entangled in the tail pulley. He immediately called for emergency medical assistance. Julien and Glenn left the area to obtain a knife to cut the conveyor belt. Barry Wishart, plant man, Yetzke, and Julien then entered the area under the crusher from the back end and traveled to the back side of the conveyor tail pulley. Julien cut the conveyor belt in half and cut off Kull's reflective vest and coveralls that were wrapped around the right side of the tail pulley shaft. Kull was removed and treated by emergency medical personnel. The Cass County deputy sheriff's department pronounced Kull dead at the scene. The cause of death was attributed to traumatic injury.

## **INVESTIGATION OF THE ACCIDENT**

MSHA was notified of the accident at approximately 5:15 p.m. on April 4, 2006, by a telephone call from Brett N. Holmes, safety advisor, to Ronald J. Baril, Sr., mine safety and health inspector. An investigation began on the same day. An order was issued pursuant to section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team conducted a physical inspection of the accident site, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, counsel enlisted by the company, and employees.

## **DISCUSSION**

### **Location of the Accident**

The accident occurred at the tail pulley of the discharge conveyor belt underneath the primary crushing plant, located in the pit area.

### **Lippmann Portable Jaw Crusher**

The crushing plant involved in the accident was manufactured by Lippmann, Model No. J15x30. The discharge conveyor, located beneath the plant crusher, was approximately 30 feet long, 42 inches wide, and 3/8-inch thick. The conveyor's self-cleaning tail pulley was 10 inches in diameter, 44 inches long, and positioned 1 foot above ground level. Expanded metal guards were positioned along both sides of the conveyor tail pulley to prevent access to the moving parts from the front end of the plant. The back and top sides of the pulley were not guarded and could only be accessed by traveling about 16 feet underneath the plant feeder and support structure from the back end. The plant was electrically powered and provided with local disconnects to the feeder, crusher, and discharge conveyor. The conveyor drive motor was rated at 15 horsepower.

### **Weather Conditions**

Weather conditions were clear. The temperature outdoors was approximately 40 degrees Fahrenheit and was not considered a factor in the accident.

### **Training and Experience**

Ayron C. Kull had a total of 4 weeks, 2 days of experience at this mine and had received training in accordance with 30 CFR, Part 46. He was performing his regular duties of removing spillage under the conveyor belts.

## **ROOT CAUSE ANALYSIS**

A root cause analysis was conducted and the following root cause was identified:

Root Cause: Operating procedures and controls were inadequate and failed to ensure that persons could safely remove spillage around moving conveyor belts.

Corrective Action: Management should implement safe operating procedures so that persons can safely remove spillage from around moving conveyor belts. Employees should be thoroughly trained to recognize identifiable hazards before any work begins.

## **CONCLUSION**

The accident occurred because management failed to establish procedures to ensure that employees could safely remove spillage near moving conveyors. The conveyor was not de-energized and blocked against motion prior to persons entering the area. The victim failed to recognize the hazard of performing work near moving machine parts.

## **ENFORCEMENT ACTIONS**

Order No. 6179436 was issued on April 4, 2006, under Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on April 4, 2006, when a miner became entangled in the Lippmann portable crusher discharge conveyor tail pulley. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at the Lippmann portable crusher until MSHA has determined that it is safe to resume normal operations in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

This order was terminated on April 14, 2006, after conditions that contributed to the accident no longer existed.

Citation No. 6188295 was issued on April 14, 2006, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.14105:

A fatal accident occurred at this mining operation on April 4, 2006, when a miner became entangled in the self-cleaning tail pulley of the Lippmann portable crusher discharge conveyor. This miner had entered the area, located under the crusher, and traveled to the back side of the tail pulley. The electrically powered conveyor

was not de-energized, nor was the conveyor blocked against hazardous motion.

This citation was terminated on April 14, 2006. Policies and procedures were reviewed with mine employees. The training included lock out/tag out prior to performing maintenance, work, or repairs near unguarded moving parts, prohibiting the removal of a guard while machinery is in operation, warning against the use of loose clothing by moving machine parts and ensuring the use of proper tools for the task. Additionally, the mine operator installed a guard across the rear access to the underside crusher discharge conveyor tail pulley.

Approved By:

Date: May 16, 2006

Steven M. Richetta  
District Manager  
North Central District

## **APPENDIX A**

### **Persons Participating in the Investigation**

#### **Aggregate Industries, Inc.**

Leon C. Belden	production manager
Richard Holmes	regional safety manager
Richard Bowden	president
Eamonn Dwyer	vice president/general manager, aggregate division
Brett Holmes	safety advisor
John Julien	plant manager
Karen L. Johnston	attorney

#### **Mine Safety and Health Administration**

Stephen W. Field	mine safety and health specialist
Earl L. Gossett	mine safety and health inspector